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ABSTRACT

This paper describes the concept of online knowledge communities. The concept is defined, and six qualities of online communities are identified: members (user roles are clearly defined); mission (generally accepted goal-statement, ideas, beliefs, etc.); commitment (members give their loyalty to the mission); social interaction (frequent interaction between the members); mutually beneficial (participation is useful for individuals and other members); and location (an online meeting place). A table provides an overview of these qualities as they apply to study, social, knowledge, and e-commerce communities. Online knowledge communities are divided into corporate communities, communities of practice (i.e., work or profession-related communities), and social knowledge communities. In addition, four guidelines for the design of line knowledge communities are presented (i.e., the online knowledge community has to be functional, usable, sociable, and valuable). Two projects are described in which online knowledge communities are designed and implemented based on these guidelines: E-study Europe, a project focusing on an online knowledge community called E-study in an international university context; and StudyCom, an online knowledge community for secondary education in the Netherlands. (Contains 21 references.) (MES)

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# Online Knowledge Communities

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**Abstract:** This paper describes the concept of Online Knowledge Communities. We define this concept and compare this type of communities to others. In addition, we present four guidelines for the design of online knowledge communities and we describe two projects in which we design and implement online knowledge communities based on these guidelines.

## Introduction

Humans have a natural tendency for community (Gartner, 1995). With the rise of new information and communication technologies (ict), new possibilities to create or being part of a community become available. A concept that is becoming popular nowadays is online community where people are involved in social structures based on Internet technologies. The concept of community was originally related to physical space (Gardner, 1995). People were living together or were united by shared interests, religion, nationality etc. Today, the Internet makes communities global. Everybody with an Internet connection can build or be a member of an online community world-wide. The tendency for community is one of the main reasons for the establishment of such online social structures, wherein people can communicate, share information, interests and beliefs, with other people. Rheingold (1993) believes that online communities are in part a response to the hunger for community that has followed the disintegration of traditional communities around the world. At least, we may expect that online communities will become substitutes for traditional communities.

Nowadays, two dominant and contrasting uses of the term online community can be found (Jones, 1997).

- The first simply equates online communities with various forms of information technology for communication in-groups. Hagel & Armstrong (1997) for example define virtual communities as a computer-mediated space where there is an integration of content and communication with an emphasis on member-generated content.
- The second view holds that online communities are new forms of 'community' created via the use of various forms of computer-mediated communication. For example, according to Rheingold (1993) online communities are 'social aggregations that emerge from the internet when enough people carry on those public discussions long enough, with sufficient human feeling, to form webs of personal relationships in cyberspace.'

Compared with the first view, technology in the second view is only a tool for community building, where the members determine the nature of the community. We prefer the second approach. The central quality of a community should concern people instead of technologies, as a community is seen as 'a group of people living together and/or united by shared interests, religion, nationality, etc.' (Procter, 1978).

In our research we are interested in the design of successful online communities and more specific in the design of online knowledge communities. We see online knowledge communities as the social structures wherein people will organize their professional development, their life long learning, their electronic performance support, their professional interests, etc. in the near future. There has already been documented a lot about online communities. However, a framework for the identification of online communities is still missing. In this paper, we present our framework and based on this framework, we describe our ideas about online knowledge communities.

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## Online communities

Many descriptions of online communities are available (for example: Janal, 1988; Ishida, 1998; Gill, 1998; Hagel & Armstrong, 1997). Analyzing the descriptions, we see six qualities of online communities:

- the members of the community: the user roles are clearly defined;
- mission: generally accepted goal-statement, ideas, beliefs, etc.;
- commitment: members give their loyalty to the mission;
- social interaction: frequent interaction between the members;
- mutually beneficial: participation is useful for themselves and other members;
- location: an online meeting place.

In this paper, we use the following definition of an online community: a group of people committed to a mission, who meet in frequent social interaction because it is mutual benificial by means of an online meeting place.

In our research, we use these six qualities to distinct types of online communities. Table 1 shows an exemplarily overview of communities.

| Types<br>Qualities | Study community | Social community | Knowledge community | E-commerce communcity |
|---|---|---|---|---|
| **Members** | Students<br>Teachers | Individual Internet users | Colleagues<br>Employers<br>Employees<br>Experts | Consumers<br>Corporations |
| **Mission** | Improving learning situation<br>Improving contact | Creating and continuation of contact<br>Creation of a 'home' for Internet users<br>Performance of a social role | Making knowledge available<br>Knowledge generation | Expanding Consumer market<br>Providing one-to-one marketing<br>Creation of clear defined markets<br>Improving customer relations |
| **Commitment** | Knowledge domain<br>Educational tasks<br>Common learning goal | Social topics<br>Particular theme | Knowledge domain<br>Task execution<br>Organizational culture | Question and demand<br>Services and products<br>Business culture |
| **Social interaction** | Documentation centre<br>Forum<br>Receiving and sending mail | Interaction: chatbox, newsgroups and adding content<br>Entertainment | Knowledge bank<br>User ID<br>Search engine | Overview of products and services<br>Order form<br>Financial transactions |
| **Beneficial** | Educational | Non profit | Professional | Profit |
| **Location** | Intranet | Internet | Intranet<br>Extranet<br>Internet | Intranet<br>Internet |
| **Examples** | Online study community<br>Distance learning<br>Virtual classroom | Online magazine<br>Supporting organizations and sport team<br>Interest groups | Professional organisation<br>Service | Auction<br>Ordering service<br>Search machine<br>Online shops |

**Table 1:** An overview of online communities.

A member is a person belonging to a group (Procter, 1978). Members in a community have explicitely chosen to participate in the community because of a distinctive focus. People who are part of a community choose to identify themselves as community members (Bock, 1998). Depending on the

reason of being a member, community members have different role models. Commitment can be described as the linkage between an individual and the organization or community (Mowday, Steers & Porter, 1982). Such a linkage leads to a strong belief and acceptance of the goals and values, a willingness to exert considerable effort on behalf of the community and a strong desire to maintain membership (Mowday, Steers & Porter, 1979). Everybody in a community should benefit from being a community. It is the concern of the members and the value they put into the community that decide the success of the community (Figallo, 1998). The notion of interactivity is central to virtual settlements (Jones, 1997). Social interaction in online communities is the communication between two or more human beings instead of human-computer interaction. According to Hagel and Armstrong (1997), interaction in a community is based on people's desire to meet four basic needs: interest, relationship, fantasy and transaction. Communication between members has to be organized in a virtual meeting place on the Internet. Members will continuously visit this particular site whenever they want to make virtual contact to community partners. If there are corporate or organizational reasons for the creation of a community intranet facilities could be used. To attract people with the same interest a community has to articulate a mission with a clear purpose and vision (Kim, 1999). The mission states what the community is all about and what members can expect. Utilizing a mission, designers of a community can create a foundation and members can build on it to maximize effectiveness (Foley, 1995).

## Knowledge communities

As said, we are interested in the design of succesful online knowledge communities. In our view, such a community is a social structure wherein people organize their professional development, more specific their life long learning, their electronic performance support, their professional knowledge interests, their network, etc. in the near future. We define an online knowledge community as a group of knowledge workers jointly taking care for a knowledge domain, who meet in frequent social interaction for their professional development by means of an online expertise center.
We see knowledge workers as the principal members of an online knowledge community (okc). A knowledge worker can be described as someone who routinely uses information in his or her task performance (Based on Rochester, 1996). There are a number of member roles. Basically, we distinct the senior, junior, expert, and a tutor. Depending of the context of an okc, such roles can be more specified. For instance, in a university setting the members can be researchers, teachers, tutors, students, external experts, and graduates. The mission is taking care for a knowledge domain. A knowledge domain can be themes like project management, entrepeneurship, knowledge management and human resource management. Taking care of such a domain together implies activities like gather information, organise information, make information accessible, synthesize information, share information, transfer information, and synthesize information. The commitment is for the greater part driven by the need of knowledge workers to keep abreast of the nowadays rapidly and continually changing knowledge domains. Naturally, we may expect that there is also personal interest in the specific knowledge domain. Interaction activities are already referred to when we spoke about taking care of a knowledge domain. When we take again a university setting as an example for an okc, this interaction is principally meant to create knowledge (research) and transfer knowledge and skills (dissimination). Being part of an okc has to be benificial for themselves and others. We mention as the main benefit the professional development of the members. An okc is the basis for life long learning, performance support, exchanging ideas with fellow members, networking, etc. Finally, the online meeting place is described as an online expertise center. Such a center contains the well-described knowledge domain, the functionality needed for taking care of the knowledge domain, and an interface that enables the members to be a true member. Well-described means normally that the knowledge is stored in a database and that it is described by meta data so that it can be applied in a way that is needed. Functionality refers to information management, communication, teaching, publishing, communication, and co-operative work facilities. The interface is crucial for the usage of such systems and has to meet the usability standards.

Given this definition it is possible to distinct okc's based on for instance knowledge domains, the context of an okc, the functionality of the expertise center, etc. In the next paragraph, we make a distinction based on the context of an okc, because organization of communities will mostly be based on the context.

### Types of online knowledge communities

Online knowledge communities can be divided in communities that are created for corporate reasons (corporate communities) and work or profession related communities (communities of practice). Also, people could be member of a social knowledge community because they are interested in a particular knowledge domain or because they belong to the target audience. For example because they have a certain age or they belong to a special interest group, for example because of their occupation. Corporate communities can further be divided according to their community space. Communities can be developed in and directed to one organisation (internal), between two organisations of the same (intra-organizational) or different (trans-organizational) companies and communities can be developed to create a relationship with people outside the organization (external). A special type of knowledge domain community is the community of practice. A community of practice is based on professional relations and research areas. Examples are teacher networks on the Internet where teachers can exchange information and material and share expertise. Compared with corporate communities that could also be work related these communities are not related to a specific (corporate) organisation. The types are described in Table 2.

| | **Corporate community internal/ intra-organizational/trans-organizational** | | | **Community of practice** | **Social knowledge community** |
|---|---|---|---|---|---|
| **Members** | Employers<br>Employees<br>Colleagues | | | Professional workers<br>Professional colleagues<br>Experts | Individual<br>Internet users |
| **Mission Commitment** | Making knowledge available<br>Knowledge creation<br>Improve work and information processes<br>Collaborative working | | | Making knowledge available<br>Knowledge creation<br>Collaborative working | Making knowledge available<br>Knowledge creation |
| **Knowledge domain** | Internal affairs | Organizational affairs | Business affairs | Professional topic | Specific theme<br>Target group issue |
| **Structure Social interaction** | Intranet | Intranet<br>Internet | Intranet<br>Internet | Internet<br>Extranet<br>Professional organization | Internet<br>Service provider<br>Municipality service |

**Table 2:** A framework for the description of online knowledge communities.

**The design of online knowledge communities**

The next question is how to design okc's? Given the definition of an online community, a social structure enabled by an online expertise center, a socio-technical analysis model is used (Eason & Harkin, 1989). Designing a knowledge community requires attention to the technical as well as the social characteristics of the okc. Based on Eason & Harkin, the community has to meet four types of design guidelines. Original, these guidelines refer to a software system. We however apply them to an 'okc', a social structure mediated by an online expertise center.

The four main guidelines we distinct, are the following. The okc has to be functional; the okc has to include all the functionalities members need and has to support the user while being member of the community. The okc has to be usable; the members have to be able to perform easily with expected results. The okc has to be sociable; the members have to be able to be a communicative person in a comfortable environment. The oks has to valuable; members have to feel that the membership of an okc is usefull. Each of these guidelines can be elaborated.

Here, we will describe two projects shortly, in which we are working on the design of okc's. In the project E-study Europe (Vries, Egeraat, & Bogdanov, 2000) we are working on an okc called E-study in an international university context. The project is going on till october 2000. In the project StudyCom (Roossink, Vries & Moonen, in preparation) we are working on an okc also called StudyCom for the secondary education context in the Netherlands. The project is expected to continue until september 2001.

E-study is primarily meant for university researchers, teachers, and students from three different countries, Poland, Germany and the Netherlands. The mission can be described as to enable students

from different countries to work together on study projects and to intensify the understanding for each others cultures. The knowledge domain is the 'design and implementation of interactive media'. The commitment of the members is on the moment for the greater part based on the co-operation within the project. However, we expect that we will be able to continue the co-operation also after the project. In the period from may until september 2000 we start the pilot in which students and teachers have to interact frequently. The benefits for students as well as teachers is gaining experience in the use of modern technologies, exchange ideas and beliefs with other European countries and to work together in study projects. In this project, we make use of a sophisticated tele-educational infrastructure, consisting of a number of nodes in each op the participating countries. One of these nodes is the online expertise center ComMedia (Vries, 1999).

StudyCom is primarily meant for secondary education teachers and learners and researchers, teachers and students from the university study program Communication Science and external experts from cultural organisations. The knowledge domain is the study profile 'Society and Culture' of the Studyhome in secondary education in the Netherlands. The mission is to offer a usable information and communication learning platform to set up, look after, pass through and evaluate study projects and to offer a meeting platform to tune supply and demand on cultural services for educational purposes. The commitment of the members is mainly based on their need to work in this field for educational purposes. For instance, the learners from secondary education have to fulfill a number of assignments in this area, by making use of ict. We expect that the benefits for each member role will be significant. Learners will be able to make use of a a coherent information, communication, publication and collaborative work environment. Teachers are enabled to mentor learners, but also to co-operate with teachers from other schools. They also have the opportunity to attract local of national cultural experts in order to support learners. In this project also, we make use of the online expertise center ComMedia (Vries, 1999). The center is tailored to the secondary education context.

Both projects are examples of our work in the design and implementation of okc's. On the conference in november 2000 we are going to present our first member experiences in these communities.

## Conclusion and discussion

In this paper we have presented our ideas about the design of okc's. We expect that online communities will become one of the main utilisations of the Internet. By working on a sense of community around a website, these sites can duck out of the mainstream of sites. Online knowledge communities are of specific interest, because in our knowledge society there is a hunger for situated information and for a continuing professional development. The idea of curricula, courses, modules will fade away and the idea of continuing learning when carrying out daily work activities will become significant. An interesting question is for instance, if universities will be able to play a role in this development.

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